THE PLANT DISEASE REPORTER

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Volume XXIV Number 11

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Other reports on fruit diseases, page 225, include notes on apple and peach diseases in Massachusetts, fruit diseases in New York, fire blight on apple in Nebraska, fruit diseases in Arkansas, a peculiar deformation of fig leaves in Texas thought to be due to cold injury, and Botrytis on strawberries in transit.

Halo blight was severe in certain bean-growing areas of Florida this season, according to L. O. Gratz, page 227.

P. A. Young describes a type of rolling of tomato leaves that was common in East Texas this year, page 228.

Brief notes on plant diseases, page 228, include reports on diseases of ornamentals in Massachusetts, some new records from Nebraska, bacterial ring rot of potato in Utah and in New York, downy mildew on spinach in New York, and drought injury to trees in Nebraska.

May weather, page 230.

Results of 1939 Survey

A total of 257 samples of the 1939 crop were plated. With the exception of Ohio most sections of the Corn Belt were fairly well represented. The results of the platings are summarized for States and for geographic regions in Table 1. A brief discussion of the results follows:

Atlantic Seaboard States (Maryland and Delaware): Judging by the amount of "total damage" in the samples received for plating from Maryland and Delaware, ear rots were about 2-1/2 times as prevalent in the field in this region as in the Corn Belt States. The relative prevalence of the various rot fungi in the damaged kernels also indicates unique and distinct climatic factors in this region in 1939. Diplodia, Fusarium moniliforme, and Gibberella, in the order named, were the leading rot fungi isolated from the samples originating in this region. Together, these 3 fungi accounted for approximately 75 percent of the damage. This is essentially the condition that has prevailed in the Seaboard States in each of the previous surveys, the only difference being that Gibberella and F. moniliforme have varied somewhat in different years in their relative importance. Gibberella, in 1939, was below its average for the 7-year period the survey has been in progress.

East-Central States (Ohio, Indiana, Illinois): This region was marked by the highest percentages for Diplodia ever recorded in this series of surveys. Approximately 75 percent of the damaged kernels plated Diplodia. Inasmuch as the "total damage" in market receipts from this area was extremely low, the high percentages recorded for Diplodia in the commercially damaged grain probably can be explained on the basis of a very low incidence of Gibberella, Fusarium moniliforme, and Nigrospora ear rots in the field and a minimum of storage rot development after the crop was harvested.

West-Central States (Minnesota, Iowa, Missouri): The conditions which affected the extremely high Diplodia percentages in the East-Central States in 1939 apparently prevailed also in Iowa and to a lesser extent in Minnesota and Missouri. The percentage for Diplodia in Iowa (56.6 percent) was the highest recorded for this State since these surveys were begun. Previously, Fusarium moniliforme has been the most important fungus in Iowa samples. Only 17.4 percent of the 1939 Iowa samples plated F. moniliforme.

Fusarium moniliforme was easily the leading fungus in Missouri in 1938, while storage rot fungi, principally Penicillium, were most frequently associated with the samples originating in Minnesota.

Western States (Kansas, Nebraska, Colorado, Texas): The results from these States ran true to form and Fusarium moniliforme, as usual, was the predominant fungus isolated from the damaged kernels. Neither Diplodia nor Gibberella has ever been isolated in any appreciable

Table 1. Average percentages, by States and regions, of fungi recovered in plating damaged kernels from samples obtained from carload lots of corn arriving at terminal markets (1939 crop).

Origin of samples	Number carloads sampled	Total damaged kernels	Sound kernels	Diplodia zeae	Gibberella saubinetti	Fusarium moniliforme	Nigrospora sphaerica	Mucor spp.	Penicillium spp.	Aspergillus spp.	Sterile kernels	Miscellaneous	Undetermined 1/
Atlantic Seaboard States:													
Md.	63	6.5	0.8	38.1	7.8	28.1	0.8	2.0	3.5	0	0.2	15.8	2.9
Del.	8	5.6	0	47.1	3.5	29.2	0.9	1.0	0.8	0	0	15.9	1.6
Average:	71	6.4	0.7	39.1	7.3	28.2	0.8	1.9	3.2	0	0.2	15.8	2.8
East Central States:													
Ohio	5	2.7	0	33.6	5.0	14.2	2.3	5.5	18.0	0	6.4	15.0	0
Ind.	36	2.6	1.2	78.2	1.9	4.5	0	1.1	1.1	0	3.6	8.4	0
Ill.	63	2.5	1.0	66.3	1.4	13.9	0.3	2.2	3.5	0.2	3.6	7.5	0.1
Average:	104	2.5	1.0	68.9	1.7	10.7	.3	2.0	3.4	0.1	3.7	8.1	0.1
West Central States:													
Minn.	14	6.0	0.6	7.5	3.3	19.2	1.8	3.9	26.4	0.4	5.8	31.1	0
Iowa	39	2.7	0.3	66.6	2.9	17.4	0.3	3.3	4.3	0.4	4.2	10.3	0
Mo.	6	2.1	1.1	10.4	0	67.8	0	7.8	2.3	1.1	1.4	8.1	0
Average:	59	3.4	0.4	40.3	2.7	23.0	0.6	3.9	9.3	0.5	4.3	15.0	0
Western States:													
S.Dak.	1	2.2	0	0	8.0	4.0	0	12.0	0	0	12.0	64.0	0
Nebr.	9	2.5	1.8	0.9	0	67.6	0	12.5	6.9	1.9	1.5	6.9	0
Kans.	3	2.4	0	0	0	73.9	0	11.2	1.1	0.9	0	12.9	0
Colo.	6	2.1	4.6	0	0.7	53.2	0	18.8	2.5	0	1.1	19.1	0
Texas	4	3.0	0	5.1	0	56.1	0	16.1	1.0	10.5	0	11.2	0
Average:	23	2.5	1.9	0.5	0.5	59.9	0	14.6	3.7	2.7	1.4	14.1	0

1/ A fungus always found in eastern samples and occasionally in those from the Middle West. Its pathogenicity as a stalk and ear rot fungus has been demonstrated by the writer in artificial inoculation experiments.

numbers in the samples originating in the western States. The general tendency for the ratio of Aspergillus to Penicillium to increase in the western and southwestern areas, observed in the two previous surveys, was again apparent in the 1939 results.

BOTRYTIS BLIGHT OF FLAX IN CALIFORNIA

Byron R. Houston

On April 3 a number of diseased flax plants of the Punjab variety were sent to the College of Agriculture by Mr. J. P. Benson, County Agent, Fresno County, California. The diseased plants were at a stage of maturity where the majority of capsules were developed to about two-thirds their mature size. Many of the capsules showed a blighting characterized by a light tan color in contrast to the normal dark green color. In many cases the infection extended several inches down the branch bearing the blighted capsule. The main stems of several of the plants were girdled by brown lesions varying from a fraction of an inch to several inches in length.

On many of the blighted capsules and stem lesions there was a profuse fungal sporulation which upon examination proved to be a Botrytis. Isolations from the diseased tissues gave in nearly all cases pure cultures of this fungus which was identified by Dr. H. N. Hansen as Botrytis cinerea.

On April 4, in cooperation with Mr. J. P. Benson, local county agent, a critical examination of the affected area in Fresno County was made. The disease was most severe in those fields which had been planted very early and were at the time of examination a month or more past the blossom stage. In the same area later plantings which had just passed the blossom stage or which were still blooming showed only an occasional blighted capsule and very little of the stem girdling. From rather complete records kept by one grower in the region it was evident that the early-planted flax had been in blossom during the latter part of February and that at this time there had been an unusually long period of humid cloudy weather with considerable rainfall, whereas the later fields were in bloom during a relatively dry period. Losses in the early-planted fields were from 10 to 25 percent, whereas the losses in the later-planted fields were from a trace to 5 percent, indicating the positive correlation between the time of blossoming, periods of wet weather, and the occurrence of the disease.

Examination of various stages of the disease on undisturbed plants in the field indicated that nearly all infections of the capsules had originated in the old dead petals which at their maturity were occasionally held between the sepals and the ovary of the flower. The fungus became established in these petals and then invaded the sepals and base

of the capsule. Under favorable environmental conditions it continued to invade the tissues of the capsule and the branch of the inflorescence. The stem lesions were initiated by the dropping of an affected petal, or possibly a normal petal which later became infected, onto a leaf or stem and adhering there because of the moist conditions prevailing. From this petal the fungus was able to penetrate the tissues of the leaf and stem with the resultant girdling causing the death of all tissues above this point. Apparently under field conditions there was very little direct penetration of the leaf and stem tissues by the germinating spores of the fungus. The above statements are supported by the fact that in nearly every case it was possible to find the remnants of the old affected petals still adhering to the plant at the point of infection of the leaf, stem, or capsule.

This appears to be the first report of the occurrence of Botrytis blight of flax in the United States.

(Division of Plant Pathology, University of California, College of Agriculture, Davis, California).

BOTRYTIS CINEREA IN CALIFORNIA FLAX FIELDS

W. W. Mackie

On April 6 samples of diseased flax were received from Dos Palos, in Fresno County, reported as attacked by mildew. The fungus was identified by Dr. M. W. Gardner and staff as Botrytis cinerea. Contemplated aeroplane dusting with sulphur or with copper dusts was discouraged, owing to the known resistance of this fungus to these chemicals.

The flax (Punjab variety) had reached the ball stage and the seed was filling. The cuticle was darkened and the fruit stems girdled by the disease. Only the small stems of the branched inflorescence were affected. The lower portion of the plants consists of single stems. Early-sown fields (November and early December) were the only ones damaged by the fungus, as the attack appeared only on plants well along in the ball stage.

The Botrytis attack was limited to Merced, Fresno, and Madera Counties and seemed to be fostered by tule fogs during the forenoon. The fog appeared to be correlated with the higher snow-covered mass of mountains to the east, and was not so prevalent to the north and south of this area. The arrival of a 3-day period of north wind stopped the spread and progress of the disease, but not before some of the flax fields suffered damage estimated at 50 percent.

Flax growers stated that the same disease had appeared in 1938, when another wet spring occurred. It appears unlikely that Botrytis cinerea will damage flax in this area except in those years when more than normal spring rain occurs.

(California Agricultural Experiment Station).

REPORTS ON DISEASES OF SMALL GRAINS

VIRGINIA: Barley stripe [Helminthosporium gramineum] was first observed in Grayson and Pulaski Counties on May 14. Numerous reports from county agents have been received concerning the severity of this disease during the past few weeks. Loose smut [Ustilago nuda] of barley was observed in Wythe County on May 13 and in Grayson and Pulaski Counties on the following day. It was found in Augusta County on May 15. Loose smut [U. avenae] of oats was observed in Roanoke County on May 17. Nematode [Anguina tritici] on wheat was observed in Wythe County on May 13. Traces of wheat stem rust [Puccinia graminis] were observed in Montgomery County on May 20, in Botetourt County on May 22, and in Pulaski County on May 25. Leaf rust [P. rubigo-vera tritici] is rapidly increasing on wheat. All grains, especially spring oats, are now showing leaf rust [Puccinia spp.] in various stages of severity. Loose smut [U. tritici] of wheat was first observed in Montgomery County on May 20, Pulaski County on May 21, Grayson County on May 22, and in Wythe County on May 24. Powdery mildew [Erysiphe graminis] has been found to be extremely severe in some fields. (S. B. Fenne, Virginia Agricultural and Mechanical College. June 3).

ARKANSAS: Plant diseases seem to be less in evidence than is often the case. Cereal rusts have as yet shown little evidence that they will be of any importance and it is probably too late for serious injury to develop. A number of cases of serious injury from oat smut have been reported. (V. H. Young, Arkansas Agricultural Experiment Station. June 7).

IOWA: Stem rust of wheat was first observed on June 5 in the experimental winter-wheat plots at Ames. The infection was all primary and rather difficult to find. Leaf rust of wheat on the same date was well distributed throughout all susceptible varieties at Ames but did not average more than a trace-minus in severity. Susceptible varieties of winter barley are being badly injured by a severe epiphytotic of powdery mildew. (H. C. Murphy, Division of Cereal Crops and Diseases. June 5).

NEBRASKA: Wheat leaf rust was located for the first time at Lincoln on May 21. The first collection of stem rust was made at Lincoln on June 2. There is a fair scattering of primary infection in the fields of the Agronomy farm here. Drouth is causing severe damage to the wheat at the present time. (R. W. Goss, Nebraska Agricultural Experiment Station. June 7).

REPORTS ON DOWNY MILDEW AND OTHER DISEASES OF TOBACCO

BED ROT AND DOWNY MILDEW IN MASSACHUSETTS: Damping-off and bed rot due to Rhizoctonia has been more prevalent and damaging this spring in tobacco beds than in most past seasons. The greatest losses occurred when the plants were in the 2-leaf stage. The plants remained small, turned yellow, and the leaves curled downward. This condition resulted from root infection, and in many instances the seedlings lingered in that stage of the disease until healthy surrounding plants were from 2 to 4 inches high. In other cases, the disease worked up to the tops and killed the plants in spots or patches varying in size. It was not associated with the lowest, dampest places in the beds, but was present usually in the higher, drier beds or bed areas.

A second type of bed rot, caused by Pythium aphanidermatum (Conn. Exp. Sta. Bul. 422, pp. 33-37, 1939) has been observed in a few instances but without much damage.

Downy mildew [Peronospora tabacina] was first reported in the State from Hampden County by County Agent W. T. Locke, who on May 23 verified reports from several growers. It was first identified in Franklin County on May 28, and in Hampshire County a few days later. The cool, wet period extending from May 21 to 28 inclusive favored the development of both downy mildew and bed rot. However, the clear, warm weather of May 30 and June 1 to date has aided materially in checking mildew. Tobacco-setting is at least 7 to 10 days late this year. Most growers started to set during the present week, June 3 to 8. (O. C. Boyd, Massachusetts State College. June 4).

DOWNY MILDEW IN CONNECTICUT: May 23 -- Mildew of tobacco appeared yesterday for the first time this year in the Connecticut Valley. Although found only in 3 sets of beds yesterday it probably is becoming prevalent in many others. We have had about a week of rainy weather, which probably accounts for its appearance at this time.

May 31 -- We have had 10 days of cool rainy weather with temperatures during most nights below 50° F. Mildew is very widespread but will probably not result in a shortage of plants because most of the growers are now turning to benzol and because the plants were well grown before the disease became serious. (P. J. Anderson*).

FIRST SERIOUS OUTBREAK OF DOWNY MILDEW IN PENNSYLVANIA, AND WIDESPREAD APPEARANCE OF WILDFIRE: For the first time blue mold has really become a serious problem in the growing of tobacco plants in Pennsylvania. An extended wet period through the weeks of May 27 and June 1 resulted in a loss of at least 25 percent of the plants produced

in the tobacco-growing areas of the State. Plants were all ready to go to the field toward the last of this infection period and consequently the loss is very hard to repair. Had the epiphytotic occurred earlier, control measures would have been more worthwhile, since there would have been time for the plants to recover after the disease had disappeared.

Wildfire [Phytomonas tabaci] is appearing in practically every plant bed at the same time that blue mold is making its appearance. (O. D. Burke, Pennsylvania State College. June 10).

DOWNY MILDEW AND BACTERIAL LEAF SPOTS IN KENTUCKY: May 25 -- Blue mold has appeared in Kentucky, and has been reported by the county agents in Christian, Todd, Logan, Warren, Monroe, Allen, Clinton, and Wayne Counties. From the best information I have the disease made its appearance on or about May 15. Personally, I have seen blue mold in 2 counties, Wayne and Clinton. In each case the disease appeared in new beds, in open fields. In one bed in Clinton County, the affected section was in plants large enough to set; in another the plants were from the size of a dime to that of a silver dollar. The weather this week has been favorable for the spread of blue mold. (Russell A. Hunt*).

May 29 -- A general and unusually severe outbreak of angular leaf spot (Bacterium angulatum) [Phytomonas angulata] in plant beds has occurred the past week. The weather has been unusually cool and wet. Where 2 applications of Bordeaux were applied the beds seem to be entirely free. One county agent claims no leaf spot has been reported in 200 demonstration beds in his county, with a general outbreak in untreated beds. (W. D. Valleau, Kentucky Agricultural Experiment Station).

June 3 -- During the past week blue mold has appeared in Rockcastle, Laurel, Madison, Montgomery, and Hart Counties. The attacks have been very mild and practically no damage has been reported. Also, the outbreaks have been widely scattered and in some counties only one or two beds are reported infected. There seems to be very little of the inoculum present in any area. Weather has been favorable for the spread of the disease for the past 2 weeks. Temperatures have been unusually low for this time of year and rainfall has been almost constant for the past 10 days. June 2 was the first really sunny day in central Kentucky for 2 full weeks.

Wildfire and angular leaf spot are widespread and much damage has been caused by these 2 diseases. Blackleg [Erwinia aroideae] in plant beds has been reported from Henry County during the past week. (Russell A. Hunt*).

June 8 -- Angular leaf spot and wildfire did considerable damage in Kentucky up to the first of this week. Plants are now rapidly outgrowing these diseases, following a period of 5 days of warm sunny weather.

Dr. Valleau and I believe that blue mold, although it has appeared in a number of counties, will not be of any great importance in Kentucky this year. We have seen it in Fayette, Bourbon, Daviess, Hancock, and Breckinridge Counties this week. The outbreaks have been extremely mild and in only one individual bed have I seen any material damage. This bed, which was ready for setting, was on an old bed site in Breckinridge County. Blue mold had first appeared under a tree where the plants were in deep shade in the forenoon. The disease had practically destroyed the small plants and had burned the leaves of large plants down to the bud. Five other beds in close proximity to this one were heavily infected on June 7, an occasional plant being yellow around the leaf veins, with none of the lesions actively producing spores.

Tobacco-setting in western Kentucky has gone forward rapidly this week and perhaps 50 percent of the crop in the Owensboro area is set. Owing to the extremely heavy rainfall of last week, ground preparation in central Kentucky was delayed until Monday and Tuesday of this week; consequently, setting in that area is between 25 and 40 percent complete. (Russell A. Hunt*).

DOWNY MILDEW IN TENNESSEE: May 20 -- Blue mold has made its appearance in Middle Tennessee. Dr. Dennis Latham reported the disease from 2 farms, one in Robertson County and the other in Cheatham County. The weather is cool and it was dry all last week.

May 24 -- Conditions are right for the rapid spread of blue mold in Middle Tennessee today. Showers and clouds covered this area yesterday and last night. The thermometer dropped below sixty. It is cool and cloudy this morning and blue mold is widely distributed even though we have had about 10 days of dry weather with hot sun during the day. The disease has been reported definitely from Sumner, Trousdale, Macon, Wilson, Cannon, Williamson, Cheatham, Robertson, Moore, and Rhea Counties, and it probably could be found in all the Middle Tennessee tobacco-growing counties.

May 27 -- Reports indicate that blue mold is widespread in Tennessee. The county agent at Morristown in eastern Tennessee says that practically every bed in Hamblen County is affected and that the weather is ideal for its spread. Probably 50 percent of the plant beds in Monroe County in southeastern Tennessee have been attacked, according to the county agent there. (Roy H. Hilton*).

SEVERE ATTACK OF DOWNY MILDEW IN NORTH CAROLINA: The attack of blue mold this year has been rather serious, especially in the southeastern district of the State. Plants were generally late, and the disease has caused a delay in transplanting more serious than there has been since 1932. However, there was no actual shortage of plants. The spread of blue mold has been rather slow as compared with other years. In some

cases it took about 4 weeks for the disease to spread over the whole bed and cause serious damage. Where the organism attacked in this manner, a rather prolonged period of treatment was necessary to be assured of ... plants for transplanting. (Howard R. Garriss, May 22*).

[*Report transmitted by R. J. Haskell].

BRIEF REPORTS ON DISEASES OF SPECIAL CROPS

COTTON SEED TREATMENT EFFECTIVE IN ARKANSAS: Numerous reports from practically all of the cotton counties of Arkansas indicate the exceptional value of cotton seed treatment with Ceresan or New Improved Ceresan this year. According to members of the Arkansas Extension Division, enough seed was treated in the State to plant over a million acres of cotton, and with unusually cool, wet weather in many sections, the benefits from cotton seed treatment can be seen in practically every community.

In the southern part of the State certain areas have had unusually heavy rains until recently and there in particular treatment has been of great benefit in making replanting unnecessary. The crop as a whole is probably 3 weeks late owing to unfavorable conditions for germination and growth and to the necessity for much replanting. (V. H. Young, Arkansas Agricultural Experiment Station. June 7).

DOWNY MILDEW ON HOPS IN NEW YORK: In Oneida County primary infection by Pseudoperonospora humuli appeared in the form of "basal spikes" on May 9, as early as last year. Twenty to 60 percent of hills developed spikes. Leaf infection was evident in all vineyards during the week of May 20. (Robert O. Magie, New York [Geneva] Agricultural Experiment Station. From Weekly News Letter, June 3).

NOTES ON DISEASES OF ORNAMENTAL PLANTS IN SOUTHERN CALIFORNIA

P. A. Miller

Armillaria root rot: The oak root rot fungus, Armillaria mellea, is widely distributed in southern California. The loss of trees, shrubs, and vines due to attack by this fungus is, however, greatest where relatively high soil moisture conditions exist naturally or are maintained artificially by frequent irrigations during the dry season. Many cases of Armillaria root rot develop within and adjacent to stream beds and drainage channels or basins. Flood waters following heavy rains deposit soil and infected debris around the root crowns of plants in these areas.

This mass of soil and debris, often several feet deep, remains cool and moist, thus providing favorable conditions for the fungus during the dry hot summer season. The same conditions may result when these or other areas are landscaped improperly. A number of cases have been observed where the root crowns of oaks, sycamores, and other trees have been covered with soil to a depth of from 3 to 6 feet by grading to establish new levels or terraces. Lawn grasses, ferns, and other shallow-rooted or shade-loving plants which require frequent watering are planted on these new levels and terraces and the soil moisture is maintained at a high level. Even though the root crowns of trees and shrubs are not covered with soil, the frequent and abundant watering of lawns and flower beds provides favorable soil moisture conditions for the development of the fungus in park and garden areas.

A survey of several hundred trees in the Fern Dell section of Griffith Park in Los Angeles revealed very few severe, active cases of oak root rot on the dry hillsides beyond the range of the outermost line of sprinkler heads. All of the trees that are now girdled and are dead or dying are at the lower levels where the soil moisture content is high. The diseased trees removed during the past year included 17 Catalina cherries, 25 oaks, and 4 sycamores.

Table 1 records the various hosts found affected with Armillaria root rot and their locations. Some of these are additions to the known host list. Others have not previously been reported from this region. The Catalina cherry and the persimmon have been considered heretofore as very resistant, if not immune. Rhizomorphs were present in abundance on the crown of the sweet olive specimens. A cluster of immature sporophores was found at the crown of the persimmon tree.

Cypress canker: The prolonged periods of wet weather during the winter months of the past few years probably account for the increased prevalence and severity of the cypress canker disease (Coryneum cardinale) which has been noted. In the hedge and tree row plantings examined during the past year, from 10 to 75 percent of the trees were found to be diseased. Forty-six trees, or approximately 70 percent of the trees in an 11-year-old planting of Monterey cypress on the University campus at Los Angeles are now affected.

Penicillium disease of ornamental palms (Penicillium vermoesenii): This disease continues to cause serious losses of large mature ornamental palms in park and street plantings. During the past year, 14 affected Cocos plumosa palms were removed by the park department of Los Angeles. They also removed 2 Phoenix canariensis, 4 Phoenix reclinata, 2 Washingtonia filifera and 3 Erythea edulis palms which were diseased. Symptoms exhibited by the Erythea edulis and Phoenix reclinata palms were typical of the disease as it affects Washingtonia filifera. Cultures of the fungus were obtained from diseased tissues of Phoenix reclinata. These two palms are additions to the known host list of the disease.

Table 1. Host plants of Armillaria mellea and their location.

Host	No. of plants	Location
Alnus rhombifolia Nutt. (White alder)	6	Griffith Park, Los Angeles
Alsophila australis R. Br. (Tree fern)	1	Griffith Park, Los Angeles
Annona cherimola Mill. (Cherimoya)	1	Beverly Hills
Azalea sp.	1	Hollywood
Diospyros kaki L. (Kaki persimmon)	1	Hollywood
Eucalyptus globulus Labill. (Blue gum)	4	San Fernando Valley
Olea europea L. (Olive)	2	Hollywood
Osmanthus fragrans Lour. (Sweet olive)	1	Hollywood
Platanus racemosa Nutt. (Western sycamore)	69	Griffith Park, Los Angeles
Prunus lyoni Sarg. (Catalina cherry)	34	Griffith Park, Los Angeles
Rhus laurina Nutt. (Laurel sumac)	7	Griffith Park, Los Angeles
Sequoia sempervirens Endl. (Redwood)	1	Griffith Park, Los Angeles
Tecomaria capensis Seem. (Cape honeysuckle)	1	Hollywood
Quercus agrifolia Nee (Coast live oak)	345	Griffith Park, Los Angeles
Salix (Willow)	1	Griffith Park, Los Angeles
Ceanothus sp.	2	Griffith Park, Los Angeles
Prunus persica Sieb. and Zucc. (Flowering peach)	2	Pasadena

Phytophthora crown rots: The wet winters of the past several years have been very favorable for the development of diseases of this sort. Phytophthora citrophthora isolated from affected crowns of honey locust (Gleditsia triacanthos L.) produced typical brown rot of lemons in inoculated fruits. Crown rot lesions on loquat (Eriobotrya japonica Lindl.) yielded cultures of Phytophthora cactorum. This is believed to be the first report of the occurrence of this disease in the United States.

Powdery mildew of coast live oak: During 1939, powdery mildew (Sphaerotheca lanestris) was prevalent on the coast live oak (Quercus agrifolia Nee) in the coastal regions of southern California. The

perithecial stage was present in abundance on the leaves of some trees. In the latter part of September a period of hot dry weather apparently destroyed the conidial stage of the fungus. The new growth that developed after this period of hot weather was free of mildew. Even buds that grow from the old witches'brooms produced normal mildew-free shoots and leaves. Some of the trees which were severely affected last year do not yet show any infection at the present time.

Verticillium wilt: During July 1939 a number of carob trees (Ceratonia siliqua L.) at the March Field, U. S. Army Air Corps, base in Riverside County were found showing typical symptoms of Verticillium wilt. Mycelium of the fungus was observed within the cells of the discolored xylem tissues examined under the microscope. Pure cultures of Verticillium were isolated from bits of these tissues. This is the first record of the carob as a host of this fungus. Another instance of Verticillium wilt affecting a Brazilian pepper tree (Schinus terebinthifolius Raddi.) was observed on the University campus at Los Angeles during July of last year. Discolored woody tissues taken from a coral tree (Erythrina caffra) on a nearby estate also yielded cultures of Verticillium.

Miscellaneous diseases: Sycamore blight (Gnomonia veneta), azalea leaf gall (Exobasidium vaccinii), loquat scab (Fusicladium dendriticum var. eriobotryae), photinia scab (Fusicladium photinicola), and oleander bacteriosis (Bacterium tonalliamum) [Phytomonas tonalliam] are about as prevalent as they have been during the past several years. An unusual abundant development of perithecia of powdery mildew (Erysiphe cichoracearum) on zinnia plants on the campus occurred following the hot dry weather in late September of last year. A single specimen of root-knot nematode (Heterodera marioni) injury on silk oak (Grevillea robusta Cunn.) was found among a group of plants in the campus greenhouse. Blight (Bacillus amylovorus) [Erwinia amylovora] was much more prevalent and severe on loquat trees this spring than during many previous years. Some trees suffered an almost total blossom blight, together with much twig blight. Mild winter temperatures as well as abundant winter and spring rains during the blossoming and fruiting period probably account for the unusual severity of the disease this year.

(University of California).

MYCOSPHAERELLA CITRULLINA ON ORNAMENTAL GOURDS (CUCURBITA PEPO)

Karla Longréo

In January 1939, Dr. L. M. Massey received some diseased specimens of warty gourds (Cucurbita pepo) which had been grown at Berlin, New York for ornamental purposes. According to the grower, few of the gourds were affected in the field, but spots became evident on the fruits

after these had been picked, washed, varnished (shellac) and packed into baskets. Approximately two weeks elapsed between the time of picking and the time when the grower first noted symptoms of the disease. In some instances the gourds rotted rapidly, while in other cases the process of rotting was slow.

The specimens sent to the laboratory exhibited lesions of various size, the larger ones involving almost half of the fruit. Numerous amber-colored to light-brown pycnidia, varying in size from 93 to 202 microns were found imbedded in the rind of the diseased portion; they bore large numbers of hyaline spores which varied greatly in size, shape, and septation. The conidia ranged in length from 4.3 to 9.3 microns (aver. 7.1 microns), and in width from 1.5 to 3.1 microns (aver. 2.4 microns). Most of the spores found in these pycnidia were either non-septate or uniseptate, but occasionally biseptate conidia were observed. Some of the nonseptate type of spores resembled in shape a typical Phoma or Phyllosticta, but others were more or less comma-shaped, or otherwise curved. The septate spores were partly elliptical to ovoid, partly clavate, often with tapering ends; frequently they were curved and of irregular shape. Constriction at the septa was not pronounced and mostly absent.

Leaves and stems of Cucurbita pepo grown in the greenhouse were inoculated with the fungus isolated from the fruit and became readily infected under humid conditions. Pycnidia bearing spores were formed within a few days following inoculation. These conidia were in shape more uniform than the ones found on the naturally-infected fruits. Later, perithecia typical of Mycosphaerella citrullina (Sm.) Gross.[1] appeared on the leaves and stems of the inoculated plants. The perithecia, 96 to 142 microns in size, were dark brown in color and of globose to depressed-globose shape. The papillate apex contained an ostiolum. The asci were clavate to clavate-cylindrical, aparaphysate, 6.4 - 9.5 x 48 - 60 microns. Each ascus bore eight 2-celled hyaline, fusoid to oblong-fusoid spores, varying in length from 10.1 to 12.9 microns, and in width from 3.9 to 4.5 microns.

Before the perithecial stage was found, identification of the pycnidial form of the pathogen had been rather difficult, owing to the extreme variation in size of pycnidia and spores. The fungus seemed to fit the description of Diplodina citrullina (Sm.) Gross. just about as well as it did that of Phyllosticta cucurbitacearum Sacc. and possibly of Phoma cucurbitacearum (Fr.) Sacc. The similarity was found especially

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[1] The writer wishes to express her appreciation to Dr. O. A. Reinking, New York State Agricultural Experiment Station, at Geneva, for making Grossenbacher's type material of M. citrullina (Sm.) Gross. available for comparison.

striking between Phyllosticta cucurbitacearum and the fungus under study when the latter had developed its fruit bodies and spores on leaves. Phyllosticta cucurbitacearum was studied, using Exsiccati material of Krieger's Fungi Saxonii, deposited at the herbarium at Cornell. Material of Phoma cucurbitacearum (Fr.) Sacc. was not accessible for comparison.

(New York State College of Agriculture).

STRAWBERRY DWARF IN MASSACHUSETTS AND NEW YORK

MASSACHUSETTS: Examination of several plantings on Cape Cod on May 10 revealed less damage this year from the spring dwarf disease than in most past seasons. Nevertheless, in a few of the more heavily injured beds, the prospective loss appeared to be not less than 25 percent. The outstanding feature in connection with the disease this year was the decidedly lesser damage in the daughter plants than in the mother plants. In most instances, even where the original plant was heavily damaged, the symptoms diminished rapidly in secondary sets with distance from the mother plant, often being entirely absent in the second and third daughter plants. A probable explanation for this unusual situation is the limited spread of the nematodes from plant to plant during the unusually dry season last year. It is thought, too, that the abnormally cold weather during the past December and January may have reduced the numbers of overwintering nematodes, thus accounting perhaps for the lighter symptoms and damage than are typical for the disease at that time of year.

As in past seasons, most of the pronounced cases of spring dwarf could be traced to plants purchased from southern nurseries, either in 1939 or the preceding year, whereas not a single diseased bed could be traced to plants from northern nurseries or from local sources where homegrown plants had been used repeatedly for several years. One local association of growers is growing 3 acres of plants on the Cape for setting their 1940 beds. This nursery was set from plants obtained from a nursery in Vermont. (O. C. Boyd, Massachusetts State College. June 4).

NEW YORK: On May 7 plants affected with "crimp" disease were found in a strawberry bed near Riverhead, New York. The affected plants were found in a fruiting bed set in 1939 and the trouble was confined to the variety Premier. The original plants came from Maryland and were brought in through the strawberry pool. A more comprehensive survey revealed the presence of diseased plants in all beds examined that were set with plants from the same source. (H. S. Cunningham, Long Island Vegetable Research Farm, Riverhead. May 31).

OTHER REPORTS ON FRUIT DISEASES

APPLE AND PEACH DISEASES IN MASSACHUSETTS: Apple scab [Venturia inaequalis] spore development, even later relatively than tree development this year up to the blossom period, advanced rapidly during the period of intermittent rains and showers on May 21 to 28. The first scab infection, resulting from the May 4 rain, appeared on May 22 to 23. It was light generally, and occurred apparently mostly on the under side of the spur leaves. The rain of May 16 to 17 furnished the second infection period. It was general over all the State. From it new scab spots appeared on May 30 to June 1. The prolonged rainy period of May 21 to 28 constituted the third infection period for scab, cedar rust [Gymnosporangium] and black rot [Physalospora obtusa]. Scab spots started to show up from that infection on June 3. Black rot leaf infection occurred also during the first two infection periods, the spots being well developed by the time scab appeared.

Peach leaf curl [Taphrina deformans] is very conspicuous in many unsprayed home orchard trees, but no more prevalent than usual in commercial orchards. (O. C. Boyd, Massachusetts State College).

FRUIT DISEASES IN NEW YORK: (Summarized from Weekly News Letter, May 20, May 27, June 3). D. H. Palmiter reported the first observation of scab infection on apple leaves May 24 in Dutchess County (May 27). Since then it has appeared rather generally (June 3). In many cases, but not all, orchards affected were said to have been unsprayed or poorly sprayed. Weather conditions have made timely spraying rather difficult. In Orange and Orleans Counties scab lesions were noticed on the blossom stems, according to J. VanGeluwe and A. J. Nichols, respectively (June 3). Fruiting bodies of the cedar rust fungi are still active (June 3). According to D. H. Palmiter, reporting from the Hudson Valley (May 20), both the scab and rust fungi would probably continue to discharge spores during rain periods until about the middle of June. Rust on apple foliage was reported from Dutchess County by A. T. Williams: "Only a slight trace of rust was observed on May 29. Apparently, in most cases, wet periods before bloom were not favorable for rust infection. Galls and cankers continue to swell. There is a greater frequency of G. germinale [G. clavipes] than of either G. juniperi-virginianae or G. globosum." (June 3). The possibility of an increased importance of the rusts in Niagara County is mentioned by J. G. Goodrich: "During the recent rains, I have observed the apple rust [G. juniperi-virginianae] fruiting bodies on red cedars in several sections of the county. Large numbers of oozing cankers of the quince rust [G. clavipes] were found in several locations. Last summer I observed considerable rust on the foliage of Wealthy apples, so the rust diseases may be on the increase here with so many red cedars being planted as ornamentals" (May 27). Frog-eye leaf spot [Physalospora obtusa] was observed on apple in Orange

County (May 27), and powdery mildew [Podosphaera leucotricha] on Cortland terminals in Niagara County (June 3). Rosette was reported from Clinton County by A. B. Burrell: "Rosette of apple, a foliage symptom of boron deficiency, has been noted on some trees that had severe cork in 1939. None of these had received soil applications of borax or boric acid in 1937, 1938, or 1939, but a few had been treated with borax this spring. This indicates that the boron had not been absorbed and distributed through the tree early enough to make possible normal terminal growth" (June 3).

Brown rot [Sclerotinia fructicola] was reported (June 3) from Ulster, Dutchess, Columbia, Niagara, Orleans, and Wayne Counties, on peach and on sweet and sour cherries, in some cases as causing damage the extent of which it was too early to determine. In one sour cherry orchard in Ulster County, according to C. G. Small, "Brown rot has ruined practically all the fruit and is seriously injuring twigs and foliage. The petal fall spray was not applied because of interplanted apples that were in bloom." Peach leaf curl was reported from some counties. In 2 unsprayed orchards inspected in Wayne County 60 to 80 percent of the leaves were affected (June 3).

Fire blight [Erwinia amylovora] is present on pears in Wayne County (June 3).

Gooseberry mildew [Sphaerotheca mors-uvae] is rather serious in many currant plantings in Orange County, and is reported from Ulster County as prevalent in unsprayed gooseberry plantings and also damaging currants to some extent.

FIRE BLIGHT IN NEBRASKA: Fire blight of apple is reported to be more severe than usual this year. (R. W. Goss, Nebraska Agricultural Experiment Station. June 7).

FRUIT DISEASES NOT IMPORTANT IN ARKANSAS: Diseases of fruit trees such as apple scab and cedar rust, and peach leaf curl seem of little importance, although apple scab is now beginning to appear on unsprayed trees. Unless considerable wet weather occurs soon in the grape region of Northwest Arkansas, grape black rot [Guignardia bidwellii] will be of minor importance. (V. H. Young, Arkansas Agricultural Experiment Station. June 7).

PARTS OF LAMINA MISSING FROM FIG LEAVES IN TEXAS: This spring the leaves appeared very late on the upper parts of at least 4 trees of ordinary blue fig (Ficus carica L.) in Jacksonville, Texas. Many buds are dead, especially in the tops of the trees. More than 1/4 of the leaves show 1 to 7 holes 2 to 10 mm. in diameter, or large, irregular sections missing from the margins of the leaves. Most of the lamina is absent from some of the leaves. These symptoms of abnormality very

probably resulted from freezing that killed parts of the buds on January 19, 1940, when the temperature was 6° F. here. The trees showed no evidence of insect injury. (P. A. Young, Tomato Disease Laboratory, Texas Agricultural Experiment Station, Jacksonville. Approved by Director A. B. Conner as Technical Paper No. 605).

BOTRYTIS SP. ON STRAWBERRIES IN TRANSIT: A shipment of strawberries from Bald Knob, Arkansas, was received at Montreal, Quebec, on May 27. The whole shipment was reported to be affected and was condemned. Sample boxes sent to the Department of Plant Pathology at Macdonald College were uniformly and completely infected. Symptoms and signs were typical for Botrytis brown rot of strawberries as described by Dodge & Stevens (Journ. Agr. Res. 28: 646-647. 1924). (Ivan H. Crowell, Department of Plant Pathology, McGill University, Macdonald College, Quebec. June 11).

HALO BLIGHT OF BEANS IN FLORIDA

L. O. Gratz

Halo blight of beans (caused by Phytomonas medicaginis var. phaseolicola (Burkh.) Link & Hall) was very severe during the first 2/3 of the growing season (April 1 to May 15), particularly in Marion, Alachua, and certain other nearby counties of Florida. Among the varieties observed were Black Valentine, Sure Crop Wax, and Giant Stringless. Many fields were inspected and only one or two were observed where halo blight was not severe. Common blight (caused by P. phaseoli (EFS.) Bergey, et al.) was also observed but this was much less serious.

The seed used was produced in western States, such as Colorado, Wyoming, and probably one or two others where during the past few years very heavy infections of halo blight causing large losses were observed and reported. It is therefore not surprising that, with the somewhat subnormal temperatures which were apparently favorable for its development, this disease was very prevalent in certain sections of Florida this season.

Surely, seed dealers and growers should insist on disease-free seed obtained only from those areas where the disease has not been reported, and from those growers in those States which make a continuous effort to produce blight-free seed. It is well known that shipping seed stock from fields that were even slightly diseased is most important in spreading the disease to all bean-growing areas.

Estimates of injury made by certain shippers indicated that the growers of 1500 or 2000 acres in the areas mentioned realized from $150 to $200 less per acre, based on current prices, than if the crop had remained halo-blight free.

(Florida Agricultural Experiment Station).

ROLLING OF TOMATO LEAVES

P. A. Young

In addition to the common rolling of tomato leaves due to drought, and another kind caused by breaking of the stems near the ground, a third kind of leaf roll became seriously common for the first time in East Texas in May 1940. This third type of leaf rolling has the following symptoms: Hypophyllous purpling of the leaf veins; prominent upward rolling and brittleness of the leaflets; yellowish chlorosis of the youngest leaflets, especially the bases of the leaflets; prominent dwarfing and unfruitfulness of the plants; and finally, yellowing and early dying of the plants. No insects have yet been found to be associated with this abnormality here. Plants with such symptoms have been rare for the last 4 years. The symptoms described strongly suggest curly top (caused by the sugar-beet curly-top virus). If the tomato "leaf roll" here is curly top, this carries the assumption that the tomato fields have been infested with Eutettix tenellus Baker, and this assumption now lacks support. Possibly many individuals of this species of vector arrived in wind from the region of the Rio Grande River (about 500 miles away); the leaf hoppers theoretically inoculated the tomatoes with the curly-top virus, and then disappeared, according to the theory of transient vectors. Some tomato fields show as much as 0.5 percent of the plants with the tomato "leaf roll" symptoms and each day other plants develop the symptoms. As additional information, it should be mentioned that potato leaves (Bliss Triumph and Netted Gem) show prominent purpling and upward rolling of the youngest leaves in one or more fields, but the plants are not wilted. This information is offered to record the presence of the abnormality, and to request other research workers to aid in determining the cause and method of spread of the tomato "leaf roll" here.

(Tomato Disease Laboratory, Texas Agricultural Experiment Station, Jacksonville. Approved by Director A. B. Conner as Technical Paper No. 606).

BRIEF NOTES ON PLANT DISEASES

DISEASES OF ORNAMENTALS IN MASSACHUSETTS: Hollyhock rust [Puccinia malvacearum], Botrytis stalk rot of delphinium, Botrytis blight of tulip [B. tulipae], and powdery mildew [Sphaerotheca sp.] of rose have been present for 10 days to 2 weeks. None is particularly outstanding.

One severe case of Rhizoctonia gray bulb rot [R. tuligarum] of tulips was observed in a large bed in Hampden County. The bulbs came from Holland last year. (O. C. Boyd, Massachusetts State College. June 4).

SOME NEW RECORDS FROM NEBRASKA: Leaf curl of chokecherry [Prunus demissa] was reported from Dixon County, caused by Taphrina confusa (Atk.) Giesenhag. The specimen was identified by Dr. Mix and I believe this is the first report from Nebraska.

Near wilt [Fusarium oxysporum f. 8] of peas was reported from 3 counties in Nebraska. I believe this is the first report of this disease in this State. (R. W. Goss, Nebraska Agricultural Experiment Station. June 7).

"POTATO PRODUCTION IN UTAH THREATENED BY BACTERIAL RING ROT": Concerning the occurrence of bacterial ring rot [Phytomonas sepedonica] in Utah, B. L. Richards, in Farm and Home Science, published by the Utah Agricultural Experiment Station (vol. 1, no. 2, p. 5, June 1940), writes in part:

"During 1939, ring rot was located in 10 counties in Utah, and it is definitely possible that the disease will be found in every potato district in the State into which seed has been imported from outside areas.

"Some of the fields studied by the Experiment Station in Utah last year showed as high as from 50 to 65 percent of the plants infected; losses were obviously heavy."

BACTERIAL RING ROT IN NEW YORK: Genesee County -- One lot of New York State (Erie County) grown Chippewa seed was found infected with bacterial ring rot--fortunately, before it was planted. (R. D. Morgan, Weekly News Letter, May 20).

DOWNY MILDEW ON SPINACH IN NEW YORK: Nassau County (Long Island), May 20 -- Blue mold (Peronospora spinacine) of spinach was found in one overwintered field and in an adjacent field of spring-sown spinach at Wantagh on May 14. May 27 -- Blue mold was found in an isolated field of spring-planted spinach in Valley Stream on May 20. June 3 -- Blue mold on spinach is becoming more prevalent, and it is quite likely to cause heavy losses if the cool wet weather continues. (Orson S. Cannon, Weekly News Letter for dates given).

DROUGHT INJURY TO TREES IN NEBRASKA: Low soil moisture is causing severe injury to many farm plantings of red cedar and pine. (R. W. Goss, Nebraska Agricultural Experiment Station. June 7).

MAY WEATHER

(From U. S. Department of Agriculture, Weather Bureau, Weekly Weather and Crop Bulletin, week ending June 4).

During the month of May the weather continued persistently warm throughout the western half of the country, and decidedly cool in most of the eastern half; precipitation was very unevenly distributed, with most areas having less than normal.

Fig. 1 shows that the monthly mean temperatures were about normal in Northeastern States and most of the Great Plains. However, from the Lake region southward, and in the Mississippi Valley the averages were below normal, although the minus departures were not large, except in the Ohio and middle Mississippi Valleys and southern Lake region. West of the Rocky Mountains abnormally warm weather prevailed with temperatures averaging mostly 4° to as many as 9° above normal.

Over the more western States there has been a remarkable persistence of warm weather, month after month, for a long time. February 1939 had extremely cold weather over most of the area, and the temperature for June 1939 averaged approximately normal. With the exception of June, every month from March 1939 to May 1940 has had above-normal temperature.

Fig. 2 shows that precipitation for May 1940, was above normal rather generally from the Ohio Valley northward and eastward, though locally deficient, while in a considerable southwestern area, from southern and western Kansas and eastern Colorado southward, most stations reported above normal. Elsewhere the monthly totals were below normal and were decidedly scanty in many places.

The relatively driest areas were the Southeast, north-central Great Plains, and central and southern sections west of the Rocky Mountains, where a large area, extending from Nevada and the western half of Colorado southward, had little or no precipitation during the entire month. Also, extremely dry weather prevailed in South Dakota and Nebraska, with western South Dakota having only about 10 percent of normal, and Nebraska, in general, but little more than a fourth of the normal amount. The largest percentages of normal were reported from the Rio Grande and Pecos Valleys of New Mexico and Texas.

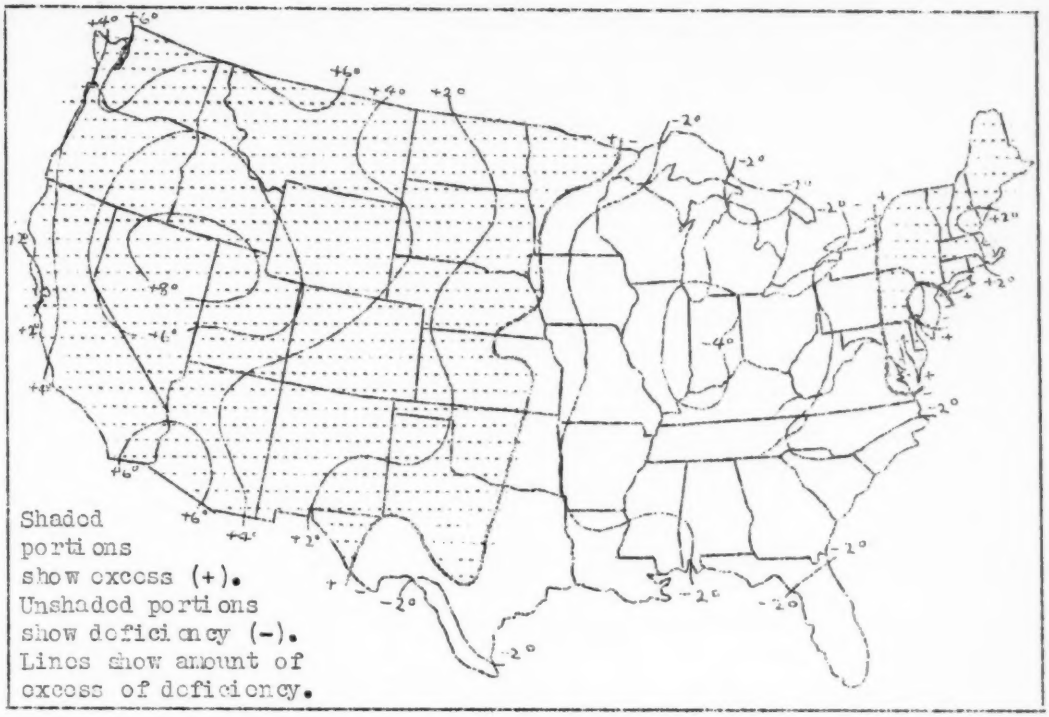

Fig. 1. Departure of mean temperature from normal for May 1940.

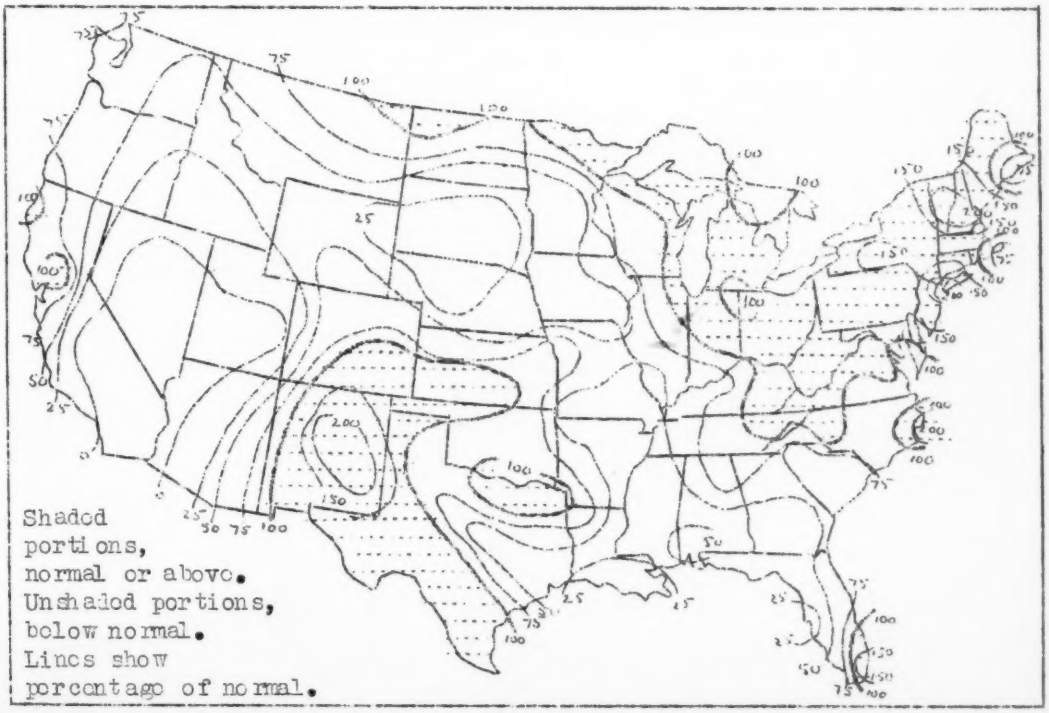

Fig. 2. Percentage of normal precipitation for May 1940.